MULTIMEDIA UNIVERSITY

STUDENT IDENTIFICATION NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2016/ 2017

BPO2614 PRODUCTION AND OPERATIONS MANAGEMENT

(All sections / Groups)

1st JUNE 2017
9.00 a.m to 12.00 p.m
(3 Hours)

INSTRUCTIONS TO STUDENT

1. This Question paper consists of 3 pages, excluding the cover page.
2. Answer **ALL** questions. All questions carry equal marks.
3. Answers should be written in the Answer Booklet provided.
4. The students are allowed to use non-programmable calculator

Answer ALL questions. All questions carry equal marks.

(5 x 20 = 100 marks)

Question 1

a. Arif Mohammad makes footballs in his Penang plant. With the recent increase in his costs, he has a newfound interest in efficiency. Arif is interested in determining the productivity of his organisation. He would like to know if his organisation is maintaining the manufacturing average of 3% increase in productivity. He has the following data representing a month from last year and an equivalent month this year:

	Last year	Now
Units produced	1000	1000
Labour (hours)	300	275
Resin (kg)	50	45
Capital invested (RM)	10000	11000
Energy (BTU)	3000	2850

i. Calculate the productivity for labour, material, capital and energy for last year and current year.

(5 marks)

ii. Show the productivity percentage change for each category and determine the improvements for each category.

(5 marks)

b. Given the discussion of Air Asia in the class, discuss the operations strategy of Air Asia.

(10 marks)

Question 2

a. Emergency call to the 911 system of Gainesville, Florida for the past 24 weeks are shown in the following table:

Week	1	2	3	4	5	6	7	8	9	10	11	12
Calls	50	35	25	40	45	35	20	30	35	20	15	40
Week	13	14	15	16	17	18	19	20	21	22	23	24
Calls	55	35	25	55	55	40	35	60	75	50	40	65

i. Compute the exponentially smoothed forecast of calls for each week. Assume an initial forecast of 50 calls in the first week and use $\alpha = 0.2$. What is the forecast for week 25?

(10 marks)

Continued..

b. In what ways is the product strategy linked to product decisions?

(5 marks)

c. Explain what is meant in service design by the "moment of truth".

(5 marks)

Question 3

a. What is the purpose of using a Pareto chart for a given problem? Explain this with an example.

(5 marks)

b. The accounts receivable at Rick Wing Manufacturing has been having difficulty getting customers to pay the full amount of their bills. Many customers complain that the bills are not correct and do not reflect the materials that arrived at their receiving docks. The department has decided to implement SPC in it billing process. To set up control charts 10 samples of 50 bills each were taken over a month's time and the items on the bills checked against the bill of lading sent by the company's shipping department to determine the number of bills that were not correct. The results were:

Sample No.	No. of incorrect bills
1	6
2	5
3	11
4	4
5	0
6	5
7	3
8	4
9	7
10	2

Determine the value of p-bar, the mean fraction defective. Then determine the control limits for the p-chart using a 99.74% confidence level. Is this process in control?

(10 marks)

c. Describe the ISO international quality standards.

(5 marks)

Continued..

Question 4

a. What is vertical integration? What strategic opportunities are provided by vertical integration? Give examples of backward and forward integration.

(10 marks)

b. M.P VanOyen Manufacturing has gone out on bid for a regulator component. Expected demand is 700 units per month. The item can be purchased from either Allen Manufacturing or Baker Manufacturing. Their price lists are shown in the table. Ordering cost is $50 and annual holding cost per unit is $5.

Allen Manufacturing		Baker Manufacturing	
Quantity	Unit price	Quantity	Unit prices
1 – 499	$16.00	1 – 399	$16.10
500 – 999	15.50	400 – 799	15.60
1000+	15.00	800+	15.10

i. What is the economic order quantity?

(2 marks)

ii. Which supplier should be used? Why?

(5 marks)

iii. What is the optimal order quantity and total annual cost of ordering, purchasing and holding the component?

(3 marks)

Question 5

a. Explain the major assumptions of the basic EOQ model.

(5 marks)

b. What is safety stock? What does safety stock provide safety against?

(5 marks)

c. Lean Management comprises of just-in-time, the Toyota Production System and Lean operations. How does each of these contribute to lean management?

(10 marks)

END OF PAPER